^{18}O(^{3}He,α) 1969De06

1969De06: An E(^{3}He)=16 MeV beam from the Heidelberg EN Tandem Van de Graaff accelerator bombarded a target containing 10 μg/cm^2 of ^{18}O and $\approx$6 μg/cm^2 of ^{16}O. A broad range magnetic spectrograph was used to analyze α-particles. The α-particle spectrum was obtained at θ=5° and the absolute cross sections were determined with an accuracy of 25%. Eight analogue T=3/2 excited states in ^{17}O were identified. The *l*-transfer values and spectroscopic factors were also deduced for four of these states.

1970Mc02: Branching ratios were measured for the decays of the lowest T=3/2 levels of ^{17}F and ^{17}O to the ground state and unresolved 6.05- and 6.13-MeV levels of ^{16}O. The experiment was performed by bombarding a nickel oxide target (98% ^{18}O enriched) with an E=12 ^{3}He ion beam. Alpha particles were detected at θ=10° with a double-focusing magnetic spectrometer.

The branching ratios for transition ^{17}O*(11.08 MeV)→^{16}O$_{g.s.}$ and ^{17}O*(11.08 MeV)→^{16}O*(6.05+6.13 MeV) are (0.91 *15*) and (0.05 *2*), respectively. The ratios of the reduced widths (θ^2) decaying to ^{16}O levels, Θ^2(g.s.)/θ^2(6.05)=3.4 *14* and Θ^2(g.s.)/θ^2(6.13)=0.32 *14* were also deduced. The width of ^{17}O*(11.08 MeV) state is <20 keV (D.C. Hensly, Ph.D. thesis, Caltech (1969) unpublished).

1973Ad02: ^{18}O(^{3}He,nα), E=12 MeV; measured σ(E$_n$,E$_\alpha$,$\theta(\alpha)$,θ(n))nα-coin. ^{17}O deduced level-width(n).

^{17}O Levels

E(level)†	J$^\pi$‡	Γ	L‡	C^{2}S#	Comments
11082 *6*	(1/2)$^-$	5 keV *1*	1	0.49	Γ: from (McDonald et al., Bull. Amer. Phys. Soc. 16, 489 (1971) ^{13}C(α,n))). See also <20 keV (D.C. Hensly, Ph.D. thesis, Caltech (1969) unpublished). Γ_{n0}/Γ=91 *15* and $\Gamma_{n(1+2)}/\Gamma$=0.05 *2* were deduced in (1973Ad02). Also θ^2(g.s.)/θ^2(6.13)=0.31 *14* (1973Ad02); these compare with θ^2(g.s.)/θ^2(6.05)=3.4 *14* and θ^2(g.s.)/θ^2(6.13)=0.32 *14* (1970Mc02). The value $\Gamma_{\alpha 0}$=0.3 keV is deduced using the measured (1973Ad02) neutron branching ratios and the width from McDonald; however in the present evaluation we adopt a different Γ=2.4 keV *3* and Γ_{n0}/Γ=81 *6*. This changes the interpretation.
12471 *5*	(3/2)$^-$		1	0.27	
12950 *8*	1/2$^+$		0	0.096	
12994 *8*					
13640 *5*	(5/2)$^+$		2	0.39	
14219 *8*					
14282 *12*					
15101 *8*					

† From (1969De06); T=3/2 states.
‡ From (1969De06).
# Calculated assuming C^{2}S=4 for ^{15}O*(6.18 MeV) in ^{16}O(^{3}He,α)^{15}O.